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SCIENCE NEWS LETTER

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THE WEEKLY SUMMARY OF CURRENT SCIENCE

JULY 17, 1943



Germ Killer

See Page 36

A SCIENCE SERVICE PUBLICATION

Do You Know?

Canada has 35 women doctors in the armed services.

Self-sealing fuel tanks are used on many ground combat vehicles.

The surface of the head constitutes approximately 6% of the total body surface.

Sponges have no special organs of respiration, so they breathe through their body walls.

Sugar beet leafy tops, pulp and molasses, by-products in processing, are valuable foods used to fatten livestock.

Wood-pulp receipts by U. S. paper mills were 22% less in the first four months of 1943 than in the same period of 1942.

Producer-gas, obtained from wood, is reported to be the source of power on 90% of the motor vehicles used by the state railways of Sweden.

Twenty locomotives built in America, used by the American army in France during World War I, and later sold to France, are still in service now in French North Africa.

In weight of fish landed, the leading American ports in 1942 were, in the order named, Los Angeles-Long Beach, Monterey, San Francisco, Boston and Gloucester; in total value of catch Boston ranked first.

Question Box

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Most articles which appear in SCIENCE NEWS LETTER are based on communications to Science Service, or on papers before meetings. Where published sources are used they are referred to in the article.

A beaver, in felling a tree, makes the deepest cut on the side most easily reached; this is usually the down-hill side.

The Federal Communications Commission has extended for three-year periods, all amateur radio operators' licenses which have expired since Pearl Harbor.

In one prewar year the United States imported from Japan 10,720,000 pounds of crab-meat valued at \$4,582,000, 95% of which came from king crab taken by the Japanese from the Bering sea in sight of American territory.

Rabbit meat has a different taste from that of the hare.

Sulfamerazine, a new sulfa drug, promises to simplify treatment, as it can be taken by mouth for pneumococcus pneumonia, meningitis, gonorrhea and streptococcus infections.

California redwood trees grow to a maximum height of 364 feet with trunks up to 20 feet in diameter; the giant sequoias, found only in the Sierra Nevada, grow up to 300 feet high and 33 feet in diameter.

SCIENCE NEWS LETTER

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MEDICINE

Aid to Stop Bleeding

New type specially treated cotton which the body can absorb can be used as pledgets soaked in thrombin. Need not be removed from wound.

► **HELP** in stopping bleeding during operations on the brain or elsewhere has been discovered in a new type of specially treated cotton, called oxidized cellulose. Dr. Virginia Frantz of the Department of Surgery, College of Physicians and Surgeons, Columbia University, has shown experimentally that this new material, unlike cotton, is absorbed when left implanted in the body.

Pledgets of the material soaked in thrombin have been used successfully to stop bleeding in 30 operations by Dr. Tracy J. Putnam, of the Neurological Institute and the College of Physicians and Surgeons, Columbia University. Surgeons will find details in a forthcoming issue of *Annals of Surgery*.

It is the thrombin, and not the oxidized cellulose, which stops the bleeding. Cellulose oxidized with nitrogen dioxide, however, gives the surgeon a better method than ever before for using the blood-clotting thrombin to check hemorrhage.

Developed about a year ago by Dr. W. O. Kenyon, C. C. Unruh and Edward C. Yackel, of the Eastman Kodak Research Laboratories, the new type oxidized cellulose has found its first publicly announced use in this life-saving application, though an earlier report suggests a possible future use in the fight against germ disease. Its birth in an industrial chemical laboratory and Dr. Putnam's report that it became available for surgical use "by a fortunate coincidence," suggests, however, that it may be finding other, as yet unannounced, uses in war industry.

Cellulose oxidized by nitrogen dioxide is a fluffy white material, looking like cotton wool. It has certain unique properties which make it especially useful to the surgeon. It dissolves slowly in slightly alkaline fluids such as blood. It is absorbed by the body from various tissues including the brain without causing inflammation of any consequence as was shown by Dr. Frantz. It can be sterilized by boiling for three minutes and can be kept in 70% alcohol until needed.

Further important medical and sur-

gical uses for it are foreseen by Dr. Putnam.

"Thin sheets of such treated cellulose," he states, "might be used to control bleeding from the cut surface of parenchymatous organs; for example, the bed of the gall bladder. A similar gauze might be used in skin grafting. For first aid use in the field, an antiseptic such as sulfapyridine, penicillin or gramicidin might be added to such tampons for packing deep wounds."

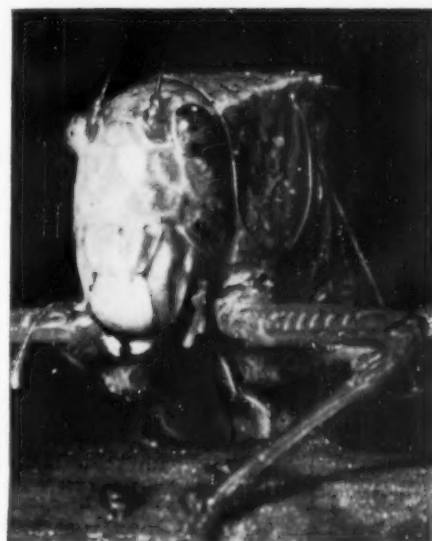
Dr. Putnam used this material by saturating it in a solution of the blood-clotting thrombin. Tiny pledgets were made by teasing out and folding the wet cotton.

The troublesome and often dangerous bleeding points during brain operations were first plugged with moist ordinary cotton and this was sucked dry. The pledget containing thrombin was then rapidly substituted for the cotton plug and covered with another piece of moist cotton which in turn was sucked dry by special surgical suction apparatus. Even with active bleeding from an artery, Dr. Putnam reports, this second tampon or plug could usually be removed within a minute leaving the treated cellulose solidly clotted.

The role of thrombin in the clotting of blood when it is shed has long been known and purified preparations have been available for some time to aid in checking hemorrhage. Its practical use in surgery, however, has been limited by difficulties of application.

When fluid preparations are used, Dr. Putnam explains, the clot which is formed in less than a second with flowing blood is apt to be washed away before it can stick to the cut, even though the blood flow is no more than an ooze. If the thrombin is applied on plugs or pledgets of ordinary cotton, the bleeding is checked even under adverse conditions but if the pledget is removed the hemorrhage usually begins again at once.

The new type cellulose, however, need not be removed, since the body can absorb it without injury. This means that the clot formed through the action



KATYDID — This unusual photograph of a familiar face was taken by George A. Smith of Quarryville, Pa., with a home-made spotlight and two-second exposure.

of the thrombin need not be disturbed and can remain in place to stop bleeding effectively.

This new kind of oxidized cotton is related chemically to the sugary outer coatings of certain pneumonia germs, technically known as their capsular polysaccharides. This and other findings about the two materials which may aid in the better understanding of immunity or resistance to pneumonia and perhaps other diseases were reported by Dr. Michael Heidelberger and Dr. Gladys L. Hobby, of Presbyterian Hospital, Columbia University, to the National Academy of Sciences.

The new oxidized cotton contains cellobiuronic acid units, separated by glucose, at intervals in the long cellulose chain and forms water-soluble salts. This type of structure is what gives virulence and type specificity to the sugary coating of Type III and Type VIII pneumonia germs.

The oxidized cotton, moreover, behaves immunologically like the pneumonia germ polysaccharides. It precipitates antiserum for these types of germs much in the way shown by the sugars isolated from the germs themselves.

These findings emphasize, the Columbia scientists state, the close correlation between the chemical composition of a germ's carbohydrate material and its specific behavior toward the antibodies developed by the body to fight germs.

Predictions as to how carbohydrates will react in various antisera can be made, the findings also show, when the con-

stitution of the repeating chemical unit in the carbohydrate is known.

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PUBLIC HEALTH

Plan Physician Control

New federal body to allot physicians to medically neglected communities is advocated by committee of physicians. U. S. Public Health Service would operate it.

► A CENTRALIZED federal body to control medical manpower and distribute physicians so that the health of the civilian population as well as the armed forces will be maintained is advocated in a statement by the Committee of Physicians for the Improvement of Medical Care, of which Dr. Channing Frothingham of Boston is chairman and Dr. John P. Peters of New Haven is secretary.

"Maintenance of the health of the civilian population is as much a national responsibility as is the control of the production and distribution and the proper allocation of commodities between the armed forces and civilians," declares this eleventh statement to be issued in the seven years of the committee's existence.

Only a nation-wide plan will be effective, it is argued, because of the barriers of medical licensure and the uneven distribution of physicians between the several states. No reliance can be placed, it is declared, on plans predicated upon the voluntary relocation of physicians.

Calling attention to the shortage of physicians reported by the Office of War Information, it is stated that "so critical has the situation become that the health of many communities is seriously threatened." The Procurement and Assignment Service now in operation has been unable to maintain an adequate supply of physicians in many areas, it is stated, although it was set up "to protect these civilian communities by preventing inequitable and uneven recruitment of physicians for the armed services."

The United States Public Health Service would be the operating agency entrusted with the responsibility of protecting the health of the civilian population, under the committee's plan. It is suggested that it may be necessary for the Public Health Service to grant commissions to physicians in order that they may be assigned to communities where

they are needed, without interference from state licensure.

Nurses and other medical personnel would be included as would be hospital and other facilities where they are needed. Health centers would be established at which groups, including specialists, could work as coordinated units. The plan contemplates the full use of Negro physicians and of qualified refugee physicians.

Where services are provided by U. S. Public Health Service officers who cannot accept fees, the persons treated, when they can afford it, would pay for their medical services on a pre-payment plan or by fees for services rendered. These funds would be devoted to an expansion of the medical services, a plan that is now in effect in certain localities.

Changes in medical education made by military authorities were criticized in the committee's report. Reduction of the premedical course to 21 months instead of the earlier war-accelerated 36 months period makes it "difficult to obtain adequate preparation for medical education" although this action will not give the armed forces more physicians until 1949.

Replacement of younger medical school teachers by older physicians threatens to cause "deterioration in the quality of teaching."

"Instead of vesting the control of our educational system in the military authorities," the report states, "it would be preferable to establish at once a comprehensive authority to assume direction of medical education, with separate bodies responsible for the major scientific and technical branches."

The endorsement of the committee is given to the bill, S. 1161, introduced into the Senate by Senator Robert F. Wagner (Dem. N. Y.) which provides "a framework and a basis for discussion from which a constructive program for

improved medical and health care of the American people may be developed." The bill provides for an advisory health council.

The Committee of Physicians' report also controverts the claims of the National Physicians Committee for Extension of Medical Services, another organization more closely aligned with the American Medical Association, that the private independent practice of medicine has been responsible for practically all the important advances of medicine in modern times.

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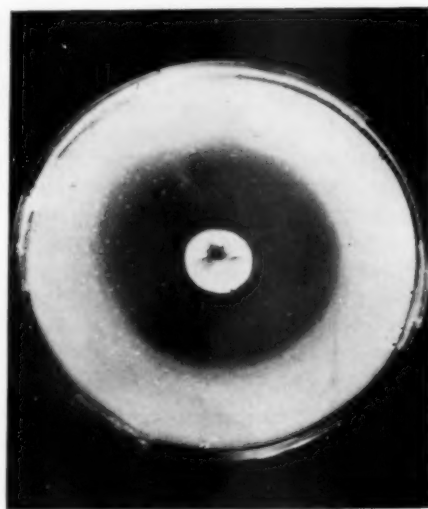
BIOLOGY

Penicillin Production on Large Scale Now Planned

See Front Cover

► PENICILLIN, powerful germ-killing substance made from a mold like that which grows on stale bread, may soon be manufactured on a large scale for military use if efforts of the Squibb Biological Laboratories and other large drug manufacturing companies are successful (See SNL, May 29).

The mold from which penicillin is made is pictured on the front cover of this week's SCIENCE NEWS LETTER. What



GERM KILLER—The hole of this doughnut was made when staphylococcus germs in the white area, which originally filled the plate, retreated before the onslaught of penicillin, germ-killing chemical from the mold, *Penicillium notatum*, seen as the white spot in the center of the hole and, greatly enlarged, on the cover.



MASS PRODUCTION—The corrugated material in the bottles is the velvety-textured, blue-green-gray growth of the penicillin mold being produced in the culture rooms of the Squibb Biological Laboratories.

it does and how it is grown are shown in photographs from the Squibb Biological Laboratories on this and the facing page.

So far, the entire output of this drug,

which rivals and in some ways outdoes the sulfa drugs as a remedy for germ-caused diseases, is reserved for our armed forces. Civilians are not likely to get any of it for a long time.

Science News Letter, July 17, 1943

PUBLIC HEALTH

New Health Puzzle

A decided increase in the number of cases of German measles is causing authorities to wonder whether the disease is also becoming more serious.

➤ **GERMAN MEASLES**, a mild and rarely fatal childhood ailment quite unconnected with Germans, Nazi or otherwise, is giving health authorities a new puzzle.

In certain cities a much larger proportion of this type of measles than of true measles has been occurring, city health officers report to the U. S. Public Health Service. Health authorities are wondering whether the increase means the disease is also becoming more serious.

In New York, for example, there were 1,000 more cases of German measles than of true measles during

the first three months of the year. Never before have New York City's health department records shown a larger proportion of German measles than of the other kind. For more than 20 years, German measles cases have averaged less than 15% of the total number of measles cases.

Los Angeles reports a similar situation. Last year there were 1,323 cases of German measles and 10,343 cases of true measles in that city. This year the figures were almost the same for the two diseases: 2,163 cases of German measles, 2,607 cases of true measles.

The puzzling situation is worrisome

because a similar increase in German measles cases in England recently was accompanied by alarming complications of this ordinarily harmless sickness. Encephalitis, the serious brain inflammation popularly called sleeping sickness, was one of the complications.

No such complications have been reported so far in New York City, at least, but if the disease is becoming more prevalent, health officers naturally wonder why and whether the increase means that the causative germ has grown more virulent and may cause a more serious kind of sickness as well as more cases.

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PUBLIC HEALTH

Polio Epidemic May Be Coming This Summer

➤ **SIGNS** that an epidemic of infantile paralysis may be brewing for this summer appear in reports, from Southwestern states especially, to the U. S. Public Health Service.

For the week ending July 3, latest for which figures are available, the total number of cases reported from all states and the District of Columbia was 190. The increase over the previous week's total of 136 cases is made up of increases reported from Texas, where the cases jumped from 39 the week of June 26 to 80 the week of July 3, and Oklahoma, which had an increase from 8 cases to 23.

Infantile paralysis cases are expected to increase at this season, but the total number of cases reported since the first of the year was larger, on June 26, than for the same period of any years since 1934. The total for the first six months was 894, of which more than half were reported from California and Texas.

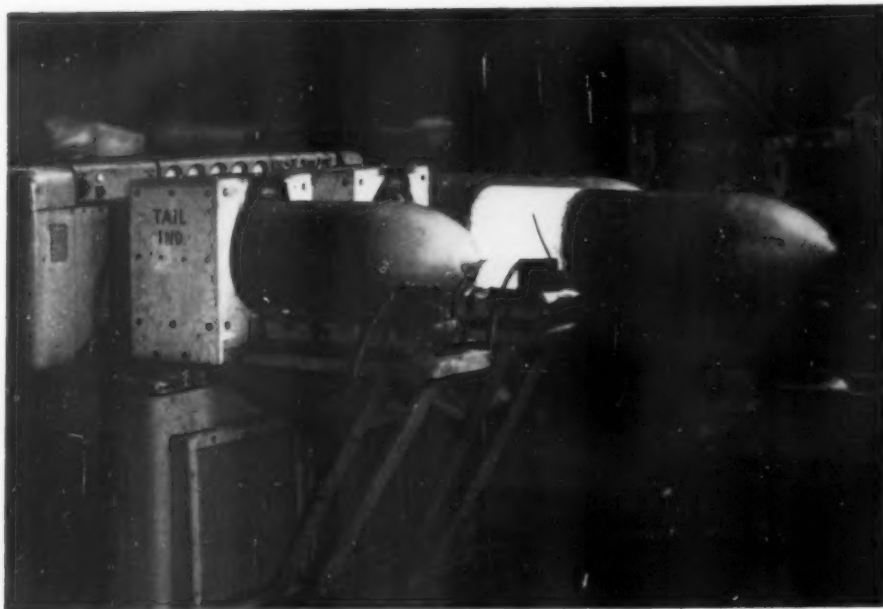
In California the cases seemed to be concentrated in Los Angeles County and other southern counties. For the week ending July 3, however, this state reported 57 cases, which is one less than for the previous week.

No other state reported more than five cases for the week of July 3.

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Some *mosquitoes* bite only in the shade, others only at twilight and still others only in sunlight.

Enough potatoes were raised on United States reclamation projects in 1942 to provide yearly rations for more than 13 million people and enough beans for more than 38 millions.



CONCENTRATED HEAT—In just three minutes and 15 seconds, the tails of these 500-pound bomb casings were heated to a 2,000-degree white heat at Wheeling Steel. The heating is done so quickly in an induction furnace that the front end remains cool enough to handle without tongs. The concentrated heating is made possible by the use of electric induction furnaces made by Ohio Crankshaft Company.

AERONAUTICS

Ocean-Going Glider

Commercial operations for the future foreseen as result of first crossing by towed glider carrying freight for Russia.

► THE OCEAN-SPANNING flight of a towed glider loaded with supplies for Russia, recently announced portends expanding use of the motorless craft for both military and peacetime transport.

This first 3,500 mile flight across the Atlantic is expected to help break down the prejudice against glider transport which some authorities charge has hampered the use of gliders in this country.

Glider were the first heavier-than-air craft to carry man aloft. John J. Montgomery, California physicist, is generally credited with making the first flight in 1884, twenty years before the Wright brothers put power in man's wings.

Much of the early glider pioneering subsequently was conducted by Otto Lilienthal in Germany. After the first World War, Germany continued to experiment with gliders, and soon the

movement swept the country, permitting the Germans to train their future war pilots under the guise of gliding as a sport.

They were among the first to try out the towed glider as a means of air transport, perhaps inspired by still earlier experiments along the same line by the Russians. During the present war the Nazis have used towed gliders both for transport of men and of materiel.

Development of the towed glider was largely disregarded in this country. Finally, less than two years ago, the Army Air Forces got a glider program under way and now have thousands of the sailplanes in service and have trained numbers of pilots. The glider just towed across the Atlantic is believed to have been of the type developed for the Army Air Forces.

A strictly American development, demonstrated by the Army's Air-Borne

Command and All American Aviation Corporation last year, is the pick-up method of launching gliders. By this method the towing plane swoops down and snatches the loaded glider from the ground by hooking the tow rope onto the special pick-up device.

Recent research has further improved the method. Experts foresee economical post-war express and local freight service by pick-up gliders. Such use of towed gliders would be practical only for relatively short hops with frequent stops, many have argued, but the 28-hour ocean flight completed by the Royal Air Force Transport Command may put even this contention in doubt.

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PHARMACY

New Pharmacy Corps Proposed for the Army

► A BILL setting up a Pharmacy Corps as part of the Army Medical Department has been passed unanimously by Congress. Under direction of 72 commissioned pharmacists, the Corps would be aimed at giving the Army the best pharmaceutical service available.

The Corps would handle all Army medicines, from purchase, through storage, shipment and compounding, to the final dispensing.

Congressional hearings brought out that in the past, men with only a few months of pharmacy training have operated some Army dispensaries, while men holding degrees in pharmacy worked under them. Numbers of inductees are said to have been put through a 90-day training period in pharmacy to fill the Army's needs, while at the same time registered pharmacists were being inducted into the ranks.

Despite controversies aired at the hearings, some Army authorities believe that revamping pharmaceutical service should wait until after the war, in view of the high standards of present Army drug supplies.

Officials of the American Pharmaceutical Association counter with the statement that putting pharmaceutical service under a Pharmacy Corps in the hands of registered pharmacists will be more efficient and give a better check on the quality of Army medicines.

Should the President sign the bill, it will be then up to the Surgeon General of the Army to decide what course of action is best for the Army.

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MEDICINE

Liver Extract Treatment

Sulfa drug poisoning which in about three out of every 100 patients causes anemia or another severe blood disorder, may be overcome by liver extract.

► **SULFA DRUG POISONING**, which in about three out of every 100 patients, causes anemia or another severe blood disorder, granulocytopenia, may be overcome by liver extract, Dr. Arthur Kornberg, Dr. Floyd S. Daft and Dr. W. H. Sebrell, of the National Institute of Health, U. S. Public Health Service, have discovered.

Rats that developed these two blood disorders from doses of the three most commonly used sulfa drugs, sulfanilamide, sulfathiazole and sulfadiazine, were cured of the granulocytopenia in four days and of the anemia in about 10 days, the scientists report (*Science*, July 2).

The blood disorders were corrected in spite of the fact that the animals continued to get doses of the sulfa drugs. For humans, this would mean not only

swift recovery from the poisonous effects of the sulfa drugs but also continuance of the sulfa drug until the pneumonia or other infection was cleared up. At present, when a patient shows signs of sulfa drug poisoning, the drug must be stopped even if he has not had enough to rout the germs attacking him.

Use of the liver extract treatment for humans sensitive to sulfa drugs will not be possible until a very concentrated liver extract is available. The liver extracts now available for treatment of pernicious anemia would have to be given in huge doses of approximately half a pound a day. This would not only be expensive but, because of the bad taste of the extract, would be very hard if not impossible for the patients to take.

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GENERAL SCIENCE

U. S. Scientists Honored

Three Harvard professors, Drs. Harlow Shapley, L. C. Graton and P. W. Bridgman, are elected to Mexican National Academy of Sciences.

► **THREE HARVARD PROFESSORS** who have recently visited Mexico have been elected correspondent academicians of the Mexican National Academy of Sciences.

Those honored were: Dr. Harlow Shapley, director of Harvard College Observatory, Dr. L. C. Graton, Harvard geologist, and Dr. P. W. Bridgman, Harvard professor of physics. All three were among the scientists from the United States who attended the conference on physics held in Puebla in May.

This is considered as an important step furthering closer cultural relations between Mexico and the United States.

Among Mexican scientists, their national academy with its building near the National University, is familiarly known as "Alzate" because its formal name is Antigua Sociedad Científica Antonio Alzate.

"Benjamin Franklin played an im-

portant part in the science of his time in Mexico," Dr. Agustín Aragon Leiva observed in the course of remarks upon the relationships of science in Mexico and the United States. "Antonio Alzate, the Mexican scientist of those times after whom the Academy is named, repeated the experiments of Franklin and explained them to his colleagues. In the early days, the American geologist, McClure, studied the Mexican record of the rocks and spent much of his life here.

"To an extent unrealized the cultures of Mexico and the United States have common origins. The hereditary roots of Mexico rest not alone in the Spanish and Indian ancestors of many of our people, but we, like our neighbors of the United States, have a large percentage of French, Polish, Russian, Dutch, Italian and German blood in our veins."

At this time, it was emphasized, there are many possibilities for cooperation between the scientists of the two countries, and the elections just culminated are considered a prelude to further joint efforts.

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MEDICINE

New Sulfa Triumphs Over Scarlet Fever, Eye Disease

► **TWO NEW SULFA** drug triumphs are among major medical advances reported in the *Journal of the American Medical Association* (July 10).

A relatively new sulfa drug, called sodium sulfathiazole desoxyephedrine and originally developed for nasal infections, greatly speeds recovery in the first, acute stage of shipyard eye (epidemic keratoconjunctivitis), Dr. Harry S. Gradle, of Chicago, and Dr. G. H. Harrison, of Waukegan, Ill., report. Instead of lasting from 14 to 18 days, as it does in untreated cases, the first stage of this disease was reduced to from three to seven days with the new treatment.

Small daily doses of sulfadiazine effectively controlled an outbreak of scarlet fever at a U. S. Naval station, Lieut. Robert F. Watson, Lieut. Comdr. Francis F. Schwenker, Comdr. J. E. Fetherston and Dr. Sidney Rothbard, of the U. S. Navy Research Unit at the Hospital of the Rockefeller Institute, New York, report. They state that there is now enough evidence to justify the use of this drug in controlling epidemics not just of scarlet fever but "of streptococci infections of the respiratory tract."

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ENGINEERING

Plastic Bearings Replace Metals in New Invention

► **A REVOLUTIONARY** new type of bearings, made of plastics reinforced with glass fibers, promises to replace babbit, bronze and other war-scarce metals, in the invention on which three Cleveland inventors, J. V. O. Palm, J. K. Anthony and J. E. Wilkey, obtained patent 2,322,771. They claim that their new bearings have under test supported 100% more load than is required of standard babbit bearings. Rights in the patent have been assigned to the Cleveland Graphite Bronze Company.

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One-fourth to one-third of our *body energy* comes from fats in the diet,

ENGINEERING

Frame Houses Are Good Shelter Against Bomb Miss

► STAY on the first floor instead of taking shelter in the basement of your home in case of bombing, James M. Landis, director of the Office of Civilian Defense, urges. Main reason for the new recommendation is that basement refuge results in too much delay in detecting fires started by incendiaries on the top floors.

Greatest danger to home owners in case of desperate, long distance raids by the Axis will be from incendiaries; fewer of the heavy high explosive bombs will be used because much of the load must be given over to fuel supplies.

Although people living in frame houses must be on the look-out for incendiaries, Director Landis cited recent tests which showed that wood frame houses have remarkable resistance to near misses of 500 pound demolition bombs. In no case did such buildings collapse, even when test bombs were dropped as close as 25 feet.

Best protection on the first floor against bomb fragments, flying glass and plaster is to get under a table or desk where there are few windows, some distance away from a chimney, and preferably where there are many enclosing partitions, such as a hallway.

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NUTRITION

Lay in Store of Vitamin A Right Now for Next Winter

► NOW is the time to be storing up vitamin A reserves for next winter. You cannot store up the B vitamins or vitamin C in your body for any length of time, but fortunately vitamin A can be stored in large amounts, particularly in the liver and kidneys. So while you can the surplus beans and peas and tomatoes from your Victory garden, to have a supply of their B and C vitamins for next winter, eat as much as possible of the dark green, leafy and yellow vegetables from the garden this summer. They are the ones that furnish vitamin A. By eating large amounts of them, and all the summer butter you can get, you may store in your body a good amount of vitamin A to help you through next winter.

Vitamin A is essential for growth, so the children in the family must get plenty of it. Babies and very small chil-

dren generally are given extra amounts in the fish liver oil or other preparation which also supplies them with vitamin D to protect against rickets. Grown-ups, however, also need vitamin A. Lack of this vitamin shows up first in the eyes, with the development of night blindness. General health also may be affected by lack of it.

The best food sources of this vitamin are liver, egg yolk, whole milk, cream, butter and oleomargarine enriched with vitamin A. Half of these items are already rationed and many people do not drink much milk or cream or eat many eggs. So it is important to know and eat the vegetable sources of this vitamin.

Color is the guide to vitamin A in vegetables. Look for yellow or dark green. Of the yellow vegetables, carrots and sweet potatoes are good sources. Among the dark green, leafy vegetables, there is a wide choice including broccoli, spinach, turnip greens, kale, beet greens and watercress. Lettuce, especially the bleached, almost white variety, is not a good source of vitamin A.

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INVENTION

Inventor of Plastic Molding Wins John Hyatt Award

► THE JOHN Wesley Hyatt gold medal and a thousand-dollar award were presented in New York to Frank H. Shaw, president of the Shaw Insulator Company, Irvington, N. J., for distinguished achievement in the field of plastics during 1942.

His plastic molding process is widely used in war production. Shell fuses, magneto housings for aircraft, gunstocks and intricate electrical devices for the Army and Navy are now made by the new molding method.

The plastic magneto housings help keep fighter planes operating at high altitudes. When hard rubber was formerly used, ignition systems sometimes went dead because the rubber burned out at high altitudes, short-circuiting the distributor points.

When detonating fuses for mortar shells are molded of plastic, enough aluminum is saved from a million fuses to build 270 fighter planes.

In winning the annual Hyatt award established by the Hercules Powder Company, Mr. Shaw helped to expand the field of plastics started by the inventor of the first plastic, John Wesley Hyatt, for whom the award is named.

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IN SCIENCE

MEDICINE

Penicillin Excels Sulfa For Treating Gas Gangrene

► PENICILLIN, the potent germ-fighter from mold, is "far superior" to the sulfa drugs in the treatment of gas gangrene, one of the most serious complications of war wounds, Dr. Lucile R. Hac and Dr. Agnes C. Hubert, of the University of Chicago and the Chicago Lying-In Hospital, report (*Proc. of the Society for Experimental Biology and Medicine*, May).

Their report is based on laboratory experiments with mice and guinea pigs infected with *Clostridium welchii*, the germ most frequently found in cases of gas gangrene. A single injection under the skin of 50 Florey units of penicillin given at the time the gas gangrene germs were inoculated into the mice protected 98% of the animals. Repeated small doses gave as good protection as single large doses. Delay in treatment lowers the survival rate, but not appreciably unless the delay is over three hours.

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ENTOMOLOGY

Chilly Spring Winds Caused Decrease in Grasshoppers

► THE ILL WINDS of our chill, rainy spring (remember them?) blew some good to the present summer. The time is now upon us for grasshoppers and chinchbugs to be making big trouble in the great Midwestern grain-raising region — and there are very few grasshoppers and hardly any chinchbugs, according to field reports gathered by the Bureau of Entomology and Plant Quarantine. Rain and cold weather are great discouragers of these two major insect pests.

The grasshoppers took another beating, even before last winter set in, the entomologists report. In mid-autumn last year, just when the females were getting ready to lay their last batch of eggs that would stay in the ground over winter, a premature cold wave and snowstorm, short but sharp, swept over a large part of the grain belt and killed the insects off by billions. So this spring's hatch was rather small to begin with.

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WILDLIFE FIELDS

ENTOMOLOGY

P.D.B. Will Blitz Ants Out of Victory Gardens

► IF THERE are ants in your plants, you can rout them with a chemical attack of P.D.B., entomologists of the U. S. Department of Agriculture advise. A really big colony of these persistent insects can do a great deal of mischief, and is not easy to get rid of by ordinary means.

P.D.B., or paradichlorobenzene, to spell it all out, is a crystalline chemical already familiar through its use to repel clothes moths. To use against ants, you simply punch holes a few inches deep in the soil over the nest, pour in a little P.D.B., and fill up with soil again. The crystals will diffuse a gas through the soil that will either kill the ants or make them so miserable that they will make haste to move elsewhere.

Carbon disulfide, a very smelly liquid, is also effective against ants, but is slightly more difficult to use and is decidedly more dangerous to have on the premises because its vapor is somewhat poisonous, and both vapor and liquid are highly inflammable.

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WILDLIFE

Snapping Turtle Acquitted Of Being a Major Menace

► SNAPPING TURTLES, which have long borne the reputation of being the "orneriest" members of the whole shell-backed tribe, are acquitted of at least one charge: that of being a major menace to game fish. Results of a detailed study of their food habits, conducted over a period of three years by Maurice M. Alexander of the University of Connecticut (*Journal of Wildlife Management*, July) do not support the snapper's ill reputation as a destroyer of trout and bass.

There was practical point to Mr. Alexander's investigation. For more than 20 years the state's warden service had been carrying on a trapping campaign every season to reduce the number of these presumed game-fish destroyers. This cost a good deal of labor and money, and it was desired to find out

whether the expenditure was justified.

During the three-year period of the study, 735 snappers were captured in river, lake and swamp habitats. All their stomachs were examined, and all those containing food were put through a biological analysis.

The study showed that the turtles had eaten fish and water plants in about equal quantities. Third item on the list was crayfish, with miscellaneous items like wood duck and muskrat in very low percentages. The fish turned out to be mainly suckers, bullheads, sunfish and perch. The faster and better game fish species did not figure appreciably in the snapping-turtle diet.

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ENGINEERING

Waterproofing Cement Walls Is Subject of Test

► RAIN penetration through masonry structures, particularly concrete walls, is prevented in large measure by the use of cement-water paints. That these paints are highly effective is shown by tests made during the past few years by C. C. Fishburn and D. E. Parsons of the National Bureau of Standards.

The effectiveness of cement-water paints and of other waterproofings for unit-masonry walls was studied by measuring the water-permeability before and after treatment of small wall specimens in conditions simulating actual service.

"Not only were cement-water paints highly resistant to water penetration, but they were more effective than emulsified resin or oil base paints," a report on the tests states. "The cement-water paint coatings were durable and were effective as waterproofing after one or two years of exposure."

On rough-textured concrete block walls, the cement-water paint was found to be most effective when applied with stiff fender-cleaning brushes rather than with soft paint or whitewash brushes. The admixture of fine sand in the first coat applied improved the protection.

The only effective and durable waterproofing treatment for brick walls that did not change the appearance of the walls was repointing or grouting the face joints, it was found.

For inside unexposed walls the investigators found that brush coatings of Portland cement and sand were more effective than bituminous coatings, but not as effective as trowel coatings of cement and sand.

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MEDICINE

Substance in Liver Good For Shock Due To Burns

► A SUBSTANCE in liver, and in some commercial liver extracts used for treatment of pernicious anemia, is effective in fighting shock due to burns, Dr. Myron Prinzmetal, Dr. Oscar Hechter, Dr. Clara Margolis and George Feigen, of the Cedars of Lebanon Hospital and the University of Southern California, discovered in experiments with rats (*Journal, American Medical Association*, July 10).

The antishock substance in liver is not the same as the anti-anemia principle. Efforts are now being made to isolate it.

War workers whose jobs require "difficult muscular effort" and who cannot because of local food and eating place conditions obtain adequate diets should be given doses of the vitamin B complex to keep up their strength and work output, it appears from the report of studies at Northwestern University Medical School by Dr. Clifford J. Barborka, Dr. Eliot E. Foltz and Dr. Andrew C. Ivy who is now on leave serving as scientific director of the Naval Medical Research Institute, Bethesda, Md.

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CHEMISTRY

Carbon Dioxide Fire-Doors Furnish Ample Protection

► THE PECULIAR fire hazards of war industries using highly inflammable substances are partially met by a new method of using liquid carbon dioxide, developed by H. V. Williamson and W. F. Mitcheltree of Chicago. They have assigned rights in their patent, No. 2,322,758, to the Reconstruction Finance Corporation.

One of the worst features about sudden fires in present-day industrial plants is their tendency to burst through doors and archways from the rooms or factory bays where they originate, and spread throughout the plant. The two inventors, in preliminary experiments with straight jets of carbon dioxide, found that they could not throw a curtain of the smothering gas across such an opening quickly enough to check such near-explosive spread.

They were able to set up barriers of carbon dioxide gas and snow, however, when they used curved, scoop-shaped orifices on opposite sides of the openings where protection was needed.

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METALLURGY

Money Gets War Dress

Coinage has been affected by the war-induced shortage of metals so that now the Mint is issuing a zinc-coated penny and a "nickel-less" nickel.

By WATSON DAVIS

► COINAGE in the United States and neighboring countries has been greatly affected by war-induced scarcity of strategic metals. Some of the familiar coins are no longer being minted. Substitutes, made of more available metals, in many cases closely resemble the coin which they replace. Others bear no likeness to their predecessors and their design may even incorporate a patriotic motive.

The newest U. S. coin is the new zinc-clad steel penny, which is not yet in wide circulation. It was issued in order to reduce the amount of critical materials, urgently needed for the war effort, that will go into coins for the daily use of the American public.

The production of this new coin was accomplished after considerable technical experimentation and research on the part of experts of the U. S. Mint at Philadelphia and other government departments.

Consideration was first given to metals other than steel and even non-metallic materials. Plastics were considered but not used for various reasons, among which is the fact that they would not work in the familiar penny slot machines.

The new one-cent piece was made of metal other than copper in order that copper might be released for the war effort. In 1942 the coinage of one-cent pieces required 4,600 tons of copper. The new coin bears the familiar Lincoln design of the most recent penny that it supersedes, at least for the duration of the war.

Slightly Lighter

It is the same size as the copper cent but is slightly lighter in weight, weighing 41.5 grains against 48 grains for the copper coin. Incidentally, both pennies have a diameter of three-fourths of an inch.

None of the old copper pennies were minted after January 1, 1943, and there was a period of over a month during

which no pennies were produced by the United States Mint.

The coating of zinc upon the steel of the new pennies is very thin, being only .00025 inches thick. Since the coins are stamped out of steel strips that have been coated with zinc, the edges of the coins are not zinc-coated. Nevertheless the fact that the obverse and reverse sides of the coin are coated interestingly protects and prevents rust on the edges of the penny. The reason is that a galvanic action is set up.

This is the same phenomenon that occurs in barbed wire where edges that have been cut do not rust even though they are not coated. The steel strips are purchased by the Mint from commercial companies and the manufacture of the coin is performed at the Mint.

Production of a new coin from a metal formerly not used in the United States coinage presented several new problems to the government metallurgists in the Mint and other government departments who were concerned with the production.

Stuck to Dies

One problem that arose was that the coin that had just been stamped out of strips stuck to the dies that were doing the stamping. An expert from the National Bureau of Standards was summoned to Philadelphia to determine the cause and his inquiries showed that a magnetic chuck had been used to hold the die during its machining. As a result the die had become magnetized and it was for that reason that the new steel pennies were sticking to it. It was a matter of only a few minutes to demagnetize the die and thereafter that trouble was avoided.

When newly struck, the steel penny has a silvery appearance not unlike that of a dime, but the new coin darkens quickly when it has been in circulation for a while.

While this is the first time that iron has been used in American coins, cast iron coins were issued in China nearly two thousand years ago. The same

reason as now, caused the use of iron in these early coins.

The new steel penny not only saves copper but it saves some tin also since the composition of the old copper penny was 95% copper and 5% zinc and tin.

War conditions brought about an unprecedented demand for pennies. Sale taxes caused a larger use of pennies, as did rising prices which caused the pricing of many things at odd figures.

For the past two years the Mint has been working 24 hours a day, including week-ends, to supply coins essential to the economic life of the nation. The output for 1942 amounted to one and a half billion pennies, which was a tenth of the Mint's total penny production of the last 150 years.

Nickel-less Nickel

You probably receive occasionally in change another new United States coin which has been issued due to the shortage of metals caused by the war. This is the new five-cent piece which may be called a "nickel-less nickel."

Like the one-cent piece, the design is the same as the older coin that it replaces, but since the color of the new five-cent piece is very similar to the color of the older one, a distinguishing mark has been placed upon it by the Mint. A mint mark has been placed directly over the dome of Monticello: "P" for Philadelphia, when the coin was made in that city, "S" for San Francisco, and "D" for Denver. This is the first time that the mark of the parent mint in Philadelphia has ever appeared on a coin.

The new five-cent piece contains 56% copper, 35% silver and 9% manganese. You will notice that silver is used in making this nickel. Although selling at a higher price than copper or nickel, nevertheless it is not actually as useful for war purposes and therefore is available for use in coin. The old coin contained 75% copper and 25% nickel.

The manufacture of the new five-cent piece was in some respects a more difficult metallurgical problem than the manufacture of the new one-cent coin. Due to the fact that five-cent pieces are used in many varieties of coin machines, it was necessary to produce a coin which had weight, elastic properties,

Invisible G-MAN

The Story of Super-Sleuths of War Production

WHEN the FBI gets on the trail of a potential saboteur, tracks him down, and catches him before he can do any damage—that's front-page news! Yet there are a few score unsung sleuths doing this kind of work—all day and every day—in America's war factories. This is their story.

They are the million-volt X-ray units developed by G-E scientists just in time to go to work, all-out, in war production.

The saboteurs they catch are flaws and blow-holes—unintentional, of course—in big cast-

ings for war machinery. The kind of mistakes that *will* turn up occasionally, no matter *how* careful and skillful the foundry worker. But serious all the same.

That's just one calamity the million-volt X-ray keeps from happening. It pours out rays like those from radium, and a lot more plentiful. They pass right through the thick metal; in minutes they show up defects before a stroke of work has been done. Anything that isn't perfect goes back to be melted over—literally liquidated!

It would take a catalog to list

all the other war jobs these X-ray units are doing, and violate the rules of military secrecy as well. But we have them because G-E scientists and engineers have been exercising their ingenuity and perseverance on the subject of electronics for years. And they've only scratched the surface.

After the war this same ingenuity and perseverance will bear fruit in things to make peacetime living better. Which is why this promising field of electronics will bear watching! General Electric, Schenectady, N.Y.



This portable X-ray unit reduces time for radiographing 5-inch-thick steel from 3½ hours to 2 minutes

The best investment in the world is in this country's future—BUY WAR BONDS

GENERAL  ELECTRIC

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PLASTIC—Sales tax tokens of cellulose acetate are being used in some states, thus conserving many tons of metal for warfare. These plastic tokens are molded complete in one operation, requiring no subsequent stamping or polishing.

conductivity and magnetic properties the same as the old coin.

All of these properties are utilized in vending machines and other coin machines, such as subway turnstiles, to eliminate slugs and fraudulent coins. Manganese was placed in the coin in order to give it the proper electrical characteristics.

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You might care to watch the change closely for the new penny or Jefferson nickel with the mint mark. When you receive them in change, inspect them but keep them in circulation so that as little critical materials as possible are used for coinage.

Due to the scarcity of metals, particularly copper, zinc, tin, aluminum and others that have been used in coins, the use of plastics for coins has been suggested. While coins of federal issue have been made only of metal, nevertheless one of the most widely used plastics, cellulose acetate, is being used as the material for sales tax tokens.

Different colors are used to distinguish different mill values where more than one denomination of token is used in a state, as well as to differentiate between adjacent or closely associated states collecting sales taxes.

The tokens have a lustrous dirt-resistant surface and a range of colors.

PUBLIC HEALTH

Outbreak of Glue Itch

Lost time in war plants has been caused by unusual number of cases of skin disease. Methods for treatment and prevention are given by the Public Health Service.

► AN OUTBREAK of glue itch among workers in the plywood and laminating industries is causing much lost time in war plants making planes, gliders, propellers and other airplane accessories. Dr. Louis Schwartz, Dr. Samuel Peck and Dr. John E. Dunn, of the U. S. Public Health Service report.

Skin trouble from glues has been often reported in the past but there has been no such outbreak as that which is now occurring in the plywood and laminating industries," they state in *Public Health Reports*.

Glue itch, technically called glue dermatitis, affected 600 out of 800 workers in one factory during its first six months of operation. These workers lost about 1,500 work days, not counting the time lost by those who stayed on the job while receiving treatment in the plant first aid station. In another factory there was a monthly labor turn-over, because of the skin trouble, of more than 40 among a total of 100 employees. In a third of the seven plants investigated, the fingers of most of the workers were inflamed and cracked by the glue.

Irritating substances in the glues cause

Tests show that they can withstand the abrasive wear of constant handling.

As an aid to the war effort, Mexico has issued a new five-centavos piece, replacing its nickel coin with a copper one. The copper coin is the new five-centavos (cinco centavos) piece which has very recently begun to circulate in Mexico. Composition of this coin is 95% copper, 4% zinc and 1% tin. It replaces a coin of somewhat smaller size which contained 20% nickel and 80% copper. In Mexico the authority that issues coins and currency is the Banco de Mexico.

The new cinco centavos pieces are known in Mexico as "Josefitas," due to the fact that they bear upon their face the image of Maria Josefa Ortiz de Dominguez, a heroine of the early nineteenth century whose name is imperishably linked with the independence of Mexico.

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the trouble. Urea-formaldehyde and phenol-formaldehyde resin adhesives caused most of the trouble in the plants inspected, but glues with such harmless-sounding names as gelatin glue or casein glue may have irritating chemicals added.

For treatment, the federal health service doctors advise that only soothing wet dressings, such as boric acid solution or Burrow's solution, should be used during the acute stages when there is swelling, blistering and oozing of the skin. In the later stages when the eruption begins to dry and crust, mild fatty-base ointments should be used.

Prevention depends on keeping the glue off the skin and washing it off promptly when it does get on. The Public Health Service advises installation of suitable exhausts to remove fumes and dust; provision of clean overalls daily; protective gloves, aprons and sleeves; installation of facilities for hand washing with soap and running water; washing or changing of brushes and sponges every two hours; and compulsory showers, on company time, after work.

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BIOLOGY—MILITARY SCIENCE

NATURE RAMBLINGS

by Frank Thone



Camouflage in Nature

► NATURALISTS used to be regarded as the most harmless and unwarlike of persons. Their preoccupation was with interesting but unimportant phenomena—how plants and animals lived and adapted themselves to their environments. The way a bittern looks like a tuft of dried grass or reeds, standing there motionless with its dun stripings; the clever concealment of a spider within a rolled-up leaf; the astonishing resemblance of the green head and shoulders of a frog to a bubbly lump of green pond-scum—all these are pleasant enough to know, and they help to make conversation as you hike through the woods and fields. But a practical-minded man might challenge them all with a sophisticated, "So what?"

But now the mild-mannered naturalist might, if he liked, glance a bit sharply at you through his spectacles and give answer: "So it'll keep you from getting shot by a German or a Jap sniper, if you're not above learning from bitterns and frogs."

Camouflage is a relatively new military term. Although soldiers have used it in a haphazard sort of way for centuries, it did not become a distinct branch of the military art, with a specialist corps of its own, until the first World War. But it has been universally employed by animals of all kinds for ages. Since Darwin popularized the concept of a struggle for survival, a couple of generations ago, scientists have been using such terms as protective patterns and concealing coloration, which after all mean almost exactly the same thing, in the endless, "for-keeps" game of hide-and-seek that goes on wherever hungry predators seek food and their shy prey seek to remain alive.

During the previous war, camouflage was largely turned over to artists. Now, however, field biologists have also been called into consultation, and they have contributed some of the ideas that have made present-day camouflage so much better than the rather splotchy, dauby efforts of 25 years ago.

Very notable, in nature-like adaptation, has been the coloration adopted for airplanes: light underneath, where they are seen against blue sky and white clouds; earth- or forest-color above, for

the bafflement of fighter planes at still higher levels. You can even tell, if you are well instructed in geography, on which front a returned bomber has been serving. Have you, for example, ever caught sight of a Fortress or a Liberator with a definite pinkish tinge in the brown of its upper surface? Does this tell you where it has been?

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Approximately 70% of all known animal species are *insects*.

BINOCULARS ON FIGHTING DUTY...



"Conning Tower! Broad on the Starboard Beam"



Pete Manning, ship's lookout, knows that sharp, brightly illuminated image means a Jap sub—preparing to attack his precious cargo of war materials. Now the entire convoy goes into action to fend off this steel shark—warned in time—because a man's trained eyes can reach miles across the water and sight a shaft of steel above the waves.

Producing binoculars, the world's finest in performance, is only one of the wartime jobs at Bausch & Lomb. Because this war is so clearly an "optical" war, the other

sighting instruments—range finders, anti-aircraft height finders and gun telescopes—are also pouring out of the Bausch & Lomb factories in tremendous quantities. Today on many fronts Bausch & Lomb is devoting the "know how" learned through years of precise optical production to the preservation of American freedom.

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PHYSICS

Infra-Red Rays Dehydrate

Drying lamps of relatively simple construction offer an easily controlled, rapid method of dehydrating fruits and vegetables.

► THE ELECTRIC radiant energy of infra-red drying lamps can be used to speed the dehydration of fruits and vegetables, Prof. John E. Nicholas, Pennsylvania State College agricultural engineer, told the American Physical Society.

Two years of experimental dehydration research by Prof. Nicholas shows that such apparatus offers ease of control as well as speed of dehydration.

"Dehydration requires removal of large quantities of water, thus reducing weight and bulk in any food preservation process," Prof. Nicholas explained. "Some loss of quality, vitamins, color and flavor occurs, but usually the shorter the time of processing the smaller the loss in quality."

Dehydration apparatus consisting of a structure supporting infra-red drying

lamps was devised by Prof. Nicholas. He found that efficiency in drying by this method is due largely to the penetrating characteristics of the wave lengths of this type of radiation between 6500 and 14000 Angstroms. Drying begins at once with no preheating necessary. No enclosure is needed since infra-red rays penetrate the material and the method allows easy escape of water vapor. Thermocouple measurements of temperatures of a slice of apple five-eighths of an inch thick show that interior may be 20 degree Fahrenheit above surface after a 10-minute exposure at midpoint between two 250-watt lamps focussed towards each other at a distance of 10 inches. Tests were conducted with apples, spinach, beets, carrots, potatoes and celery.

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ARCHAEOLOGY

Greek Talking Places

For the forums where they debated political questions, the ancient Greeks developed architecture which survives today.

► GREEKS have always been heroes, from ancient Marathon to modern Argyrokastron. But they never have been the "strong, silent" type. They always liked to talk, and the record shows that they have talked well.

So much did the ancient Greeks like to talk, especially about that most peren-

nial of all subjects for discussion, politics, that they were the first of all peoples to build special places in which to do it. Remains of these talking-places stand as earliest monuments to the first of the Four Freedoms: the freedom of speech.

Descriptions and pictures of all of these old Greek forums that have been excavated by archaeologists are presented in a new book, *The Political Meeting Places of the Greeks*, by Dr. William A. McDonald of Lehigh University, published by the Johns Hopkins Press.

These talking-places bore various names; agora, which means simply field or open space; ecclesia, usually translated as church but perhaps more accurately rendered by that grand New England name, meeting-house; geronticon, which would translate literally as place of the old men, or more conveniently, senate.

Throughout Greek history, and even in the pre-Greek culture of ancient Crete,

such meeting-places followed the same basic pattern: rows of stone benches, curved into a horseshoe or arc pattern cut by converging aisles, rising one behind the other like a flight of steps, with a platform for the speaker and a raised place for the presiding officers in the focus of the arcs.

Once in a while the lines would not be curved but would follow the three sides of an open-ended rectangle. Usually the meeting-places were roofless, for the dry climate of Greece permitted open-air sessions at practically all times.

It is interesting to note that the same patterns still prevail in modern legislative halls. The concentric horseshoe or arc type can be found in both houses of Congress and in most of the legislative chambers of the various state capitols. The rectangular arrangement is classically developed in Britain's House of Commons, and on a smaller scale in the first American national assembly place, Independence Hall in Philadelphia.

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AGRICULTURE

Seeds in Paper Sheets Used for Quicker Sowing

► FOR QUICKER and more even sowing, two New York inventors, W. H. Woolf and P. P. Korn, distribute seeds in rows on sheets of paper, over which other sheets, slightly corrugated, are laid and then bonded down under pressure with an adhesive. One of the sheets is perforated to permit the easy emergence of roots. The whole sheet is laid on the soil and watered, becoming at once a moisture-gathering and weed-discouraging mulch. Patent 2,323,746 has been issued on this invention.

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WYOMING

Yes, even THIS summer you may fish in its mountain streams, ride horseback through its hills and canyons, find Indian relics and marine fossils in a region of great historical and geologic interest.

The Patons welcome a limited number of guests at their ranch in the Big Horn country. They offer plenty of ranch grown food, comfortable cabins and gentle horses. May they tell you more? Write:

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• New Machines And Gadgets •

✿ **A NEW TYPE** of alcohol has been derived from the resin in waste pine stumps. Known chemically as hydroabietyl alcohol, the product opens the way for a new series of products. It may be used for making transparent paper, as a holding agent for China wood oil in varnishes, and as a plasticizer for various lacquers and protein film-formers.

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✿ **FIRST FLUORESCENT** lamp starter to have an average rated life of three years is now on the market. Its features also help prolong the life of the lamp and lower maintenance costs.

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✿ **CIRCULAR**, vest pocket slide rules are now available. They are said to be accurate and unbreakable.

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✿ **LOW-COST** soft water is now available to those small communities that have long fretted under the inconvenience of hard water. Water is sent spiraling through an inverted steel cone and comes out soft. The process avoids the disposal problem of the sludge precipitated by some older, more cumbersome methods.

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✿ **THREE-IN-ONE** combat gloves such as the one the pilot is wearing have been developed for use by United Nations flyers in sub-zero temperatures. An inner rayon glove with latex-treated thumb and forefinger enables the wear-

er to handle papers and pick up small objects. The middle glove is wool with a leather thumb-pad for gripping. The outer glove of soft horsehide has curved fingers; it stays soft after being wet and dried repeatedly. The long gauntlet zipper runs along a stiff section to prevent jamming.

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✿ **SYNTHETIC RUBBER** sponge has been developed that will stay soft and compressible at 40 below zero. It is supplied in black slabs or molded shapes for many wartime uses. The problem of making ordinary rubber products that would stay flexible at subzero temperatures had already been solved, but making a sponge compound with the same properties was a more difficult job.

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✿ **PLANE TIRES** designed to reduce landing hazards and to save weight substitute nylon cord for the customary cotton or rayon construction. Fewer plies of rubberized cord are used, yet greater strength is claimed.

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✿ **AN AUTOMATIC** machine tool control put intricate milling, boring, shaping, and similar operations, on a high-speed basis. It operates by converting changes in electrical impulses into hydraulic motion.

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If you want more information on the new things described here, send a three-cent stamp to SCIENCE NEWS LETTER, 1719 N St., N. W., Washington 6, D. C., and ask for Gadget Bulletin 165.

MEDICINE

British Medical Units Arrive Via Parachute

➤ **PARACHUTING** British medical units to care for the wounded in the advance line of action proved successful in the Tunisian campaign, the London correspondent reports (*Journal of the American Medical Association*, June 5).

This revolutionary advance in army medical service may lead to the adoption of air-borne medical units on a large scale by the British army. At present only the air corps is equipped to land surgeons and ambulance units by parachute and glider.

A medical unit consisting of ten men, including a surgeon lieutenant, was

● RADIO

Saturday, July 24, 1:30 p.m., EWT

"Adventures in Science" with Watson Davis, director of Science Service, over Columbia Broadcasting System.

Dr. Fred C. Bishopp, Assistant Chief, Bureau of Entomology and Plant Quarantine, U. S. Department of Agriculture, will speak on "Personal Insects, those insects which attack man, such as mosquitoes, flies, gnats, chiggers, and ticks."

dropped by parachute close to the line of battle in the Tunisian campaign. During one day alone this unit attended 162 wounded. Due to the medical attention made immediately available by this means, the lives of all but one man were saved.

The unit arrived complete with full dressing station equipment, operating apparatus and instruments, anesthetics, sterilizers, medicines and dressings. Normally an air-borne medical unit can assemble its operating equipment within ten minutes of landing. Sufficient medical supplies and food are carried with the unit to last for several days without supplementary supplies.

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First Glances at New Books

► ONE OF AMERICA'S great men comes to life in the stirring pages of *TRAIL TO LIGHT, A Biography of Dr. Joseph Goldberger*, by Robert P. Parsons (*Bobbs-Merrill*, \$3). The well known discovery of the role of diet in preventing and curing pellagra was the crowning point of a dramatic, vigorous career whose earlier chapters, like its hero, are but little known to the general public. Dr. Goldberger's ideals have left their mark on the U. S. Public Health Service. The story of his lifetime of tireless devotion to science in the service of mankind, as described in this exciting book, will bring welcome refreshment to war-weary grown-ups and fire the imagination of many a teen-age boy and girl.

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► AIR-MINDED READERS, and full-fledged pilots as well, will find air-flow phenomena clearly traced in *C. Townsend Ludington's SMOKE STREAMS* (*Coward-McCann, Inc.*, \$2.75). The 125 photographs illustrating the text are representative of work by the author and his associates at the Griswold Smoke Tunnel during recent years, a project considered an important contribution to aeronautical education.

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► HOW ELECTRICITY came to play a major part in the life of modern America is told by Malcolm MacLaren in *THE RISE OF THE ELECTRICAL INDUSTRY DURING THE NINETEENTH CENTURY* (*Princeton University Press*, \$3.75). It is a well-documented account that will make good reading for those with a special interest in the field.

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► FIRST AID for home equipment is explained in *THE HANDBOOK FOR HOME MECHANICS* by Eugene O'Hare (*Garden City Pub. Co.*, 69c.). In days when repair men are often hard to get, this simply written, illustrated manual will be welcomed by the homeowner. It starts with an explanation of basic tools and progresses to the care and repair of mechanical and electrical systems and appliances.

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► ALL WARFARE is psychological warfare and must be fought with wea-

pons of the mind as well as guns and explosives. To give America's fighting man the best that psychological science has to offer in knowledge of himself, his allies and his enemies, that will aid him in keeping his senses efficient, his mind alert and his spirits high, 59 collaborators have pooled their talents to produce *PSYCHOLOGY FOR THE FIGHTING MAN* (*Infantry Journal—Penguin*, 25 cents). The book was produced under the direction of a subcommittee of the National Research Council with the cooperation of Science Service.

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► BUSINESS MEN will read in Laurence Vail Coleman's *COMPANY MUSEUMS* (*American Ass'n. of Museums*, \$2.50) of a growing movement in American industry: the establishment of private collections which record the historic activities of a business in war or peace. Eighty companies are known to have museums and Mr. Coleman believes these may well be multiplied manyfold in the future. How-to-do-it is the main theme of his book, supplemented by brief outlines of most of the company museums now in existence.

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Just Off the Press

ARCHAEOLOGICAL RECONNAISSANCE IN CAMPECHE, QUINTANA ROO, AND PETEN—Karl Ruppert and John H. Denison Jr.—*Carnegie Institution of Wash.*, 156 p., plus 126 fig. and 75 plates, \$4.25 paper, \$4.75 cloth.

THE CITY: Its Growth—Its Decay—Its Future—Eliel Saarinen—*Reinhold*, 380 p., illus., \$3.50. Any planning for post-war period is bound to include some forecasting with regard to design of cities. The author is an architect who came to the United States from Finland.

EDWARD TYSON, M.D., F.R.S. 1650-1708 AND THE RISE OF HUMAN AND COMPARATIVE ANATOMY IN ENGLAND: A Study In The History of Science—M. F. Ashley Montagu—*The Amer. Philosophical Soc.*, 488 p., illus., \$5. Memoirs, Vol. XX.

FAMILY SITUATIONS: An Introduction To The Study of Child Behavior—James H. S. Bossard and Eleanor S. Boll—*Univ. of Pennsylvania Press*, 265 p., \$3. A sociological text with a different approach.

FUNDAMENTALS OF ENGINEERING DRAWING: For Technical Students and Professional Draftsmen—Warren J. Luzadder—*Prentice-Hall*, 568 p., illus., \$4. Designed as a self-teaching text book in engineering drawing.

GEOMORPHOLOGY: The Evolution of Landscape—Norman E. A. Hinds—*Prentice-Hall*, 894 p., illus., \$5.

HOME CANNING MADE EASY—Miriam Williams—*Macmillan*, 122 p., illus., \$1.50.

LOOK AND LEARN—Wilbur L. Beauchamp, Gertrude Crampton and William S. Gray—*Scott*, 72 p., illus., 84c. Basic studies in science: Curriculum Foundation series. A teacher's ed. containing a 37 p. guidebook. Science for first grade; done in very attractive picture-book style.

MATHEMATICS MADE SIMPLE—Abraham Sperling and Monroe Stuart—*Kenmore Pub. Co.*, 128 p., illus., \$1.49 paper.

THE NATURE AND PROPERTIES OF SOILS: A College Text of Edaphology—T. Lyttelton Lyon and Harry O. Buckman—*Macmillan*, 499 p., illus., \$3.50. 4th ed., rev.

ON YOUR OWN: How to Take Care of Yourself in Wild Country—A Manual For Field and Service Men—Samuel A. Graham and Earl C. O'Roke—*Univ. of Minnesota Press*, 149 p., illus., \$2.

PLOWMAN'S FOLLY—Edward H. Faulkner—*Univ. of Okla. Press*, 161 p., \$2.

SANTOS: The Religious Folk Art of New Mexico—Mitchel A. Wilder and Edgar Breitenbach—*Taylor Museum of the Fine Arts Center*, 64 plates, \$4.

THE SCIENCE OF NUTRITION—Henry C. Sherman—*Columbia Univ. Press*, 253 p., illus., \$2.75.

SHELTER TREES IN WAR AND PEACE—Ephraim Porter Felt—*Orange Judd Pub. Co.*, 320 p., illus., \$2.50.

SHIPBOARD MEDICAL PRACTICE: A Handbook of Ship Sanitation and Emergency Medical Aid at Sea—W. L. Wheeler, Jr.—*Cornell Maritime Press*, 114 p., illus., \$1. By the Medical director of Grace Line.

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